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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,876

09/22/2006

Philippe Robert

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EXAMINER

THOMAS, BRADLEY H

ART UNIT

PAPER NUMBER

2835

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,876	Applicant(s) ROBERT, PHILIPPE	
	Examiner BRADLEY H. THOMAS	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/09 has been entered.

Claim Objections

2. Claim 1 is objected to because of the following informalities: in line 10, it is believed that "a second stable position" should be changed to "the second...position", since the second position was previously mentioned earlier in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou et al. (US 2005/0219016) and further in view of Charvet et al. (US 6,703,916).

Regarding independent claim 1, Chou et al. teaches a microswitch comprising:

- a deformable membrane (250) comprising at least two flexure arms (205) and at least one contact arm (230) arranged between the two flexure arms (205), the arms (205) being substantially parallel to each other in a first stable position (see Figs. 2A-B), the membrane (250) being physically attached to a substrate (210) by means of the flexure arms (205) by at least one of the ends of each flexure arm (205) (see left side of Fig. 2B),
- the flexure arms (205) designed to deform, from the first stable position (e.g. Fig. 2B) of the microswitch (200) to a second stable position (e.g. Fig. 2D) in such a way as to establish in the second stable position an electric contact between at least a first conducting pad (215) formed on the substrate (210) and at least a second conducting pad (232) arranged on the contact arm (232), in a second stable position (see [0030]),
- the contact arm (230) being attached to each of said flexure arms (205) in high deformation areas (e.g. areas connected to 220, see Fig. 2D) of said flexure arms (205), the contact arm (230) remaining substantially parallel to the substrate (230) and deforming less than the flexure arms (205) upon actuation of the microswitch (200) (see Figs. 2C-D) (see [0030]),

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- and complementary electrostatic holding means (220, 212) respectively fixedly secured to the membrane (250) and to the substrate (210) and designed to hold the microswitch (200) in the second stable position of the membrane (250).

except for:

- the flexure arms comprising actuating means.

Charvet et al. teaches that it is known to have a microswitch with a thermal actuator in the form of heating resistors (14, 15) (see 0008] and Fig. 1a). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used heating resistors as taught by Charvet et al. in the device of Chou et al., since Charvet et al. states at col. 3, line 48 to col. 4, line 4 that such a modification would have caused the beam to bend, thus ensuring electrical continuity. The implementation of thermal actuators in the form of heating resistors would have thus enabled more effective operation of the switch and more certain continuity of the switch upon actuation.

Regarding claim 2, Chou et al. alone teaches:

- the contact arm (230) supporting the electrostatic holding means (e.g. 220, 212) is elongate (see Fig. 2A).

Regarding claim 3, Chou et al. alone teaches:

- the two ends of the flexure arms (205) are fixedly secured to the substrate (210, see Fig. 2B), the contact arm (230) being (indirectly) attached (via 220), via a

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central part thereof, to the flexure arms (205) at the (height) level of their respective central parts (see Figs. 2A-B).

Regarding claim 4, Chou et al. alone teaches:

- each flexure arm (205) comprises a first end fixedly secured to the substrate (210) (see Fig. 2B) and a second end fixedly secured (indirectly via 220) to the contact arm (230), the second ends of the two adjacent flexure arms (205) being respectively (indirectly) fixedly secured to opposite ends of the corresponding contact arm (230) (see Fig. 2A).

Regarding claims 5 and 6, Chou et al. discloses the claimed invention except for:

- the actuating means of the microswitch comprise a thermal actuator;
- the thermal actuator comprises a heating resistor inserted in at least one end of the flexure arms.

Charvet et al. teaches that it is known to have a microswitch with a thermal actuator in the form of heating resistors (14, 15) (see 0008] and Fig. 1a). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used heating resistors as taught by Charvet et al. in the device of Chou et al., since Charvet et al. states at col. 3, line 48 to col. 4, line 4 that such a modification would have caused the beam to bend, thus ensuring electrical continuity. In the case of Chou et al., such a modification would have improved the bending of arms 205. The implementation of thermal actuators in the form of heating resistors would have thus

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enabled more effective operation of the switch and more certain continuity of the switch upon actuation.

Regarding Claim 8, Chou et al. discloses the claimed invention except for explicitly teaching:

- the flexure arms are bimetal strips.

Charvet et al. teaches that it is known to have a membrane (11) that undergoes a bimetallic effect (see Fig. 4 and col. 3, line 65 to col. 4, line 4). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used bimetallic elements for arms as taught by Charvet et al. in the device of Chou et al., since bimetallic elements are well known in the switch art. In the case of Charvet et al., the bimetallic elements aid in the bending of the beams into the cavity, which would have ensured desired and reliable operation of the switch.

Regarding claim 9, Chou et al. alone teaches:

- the electrostatic holding means (220, 212) of the membrane comprise at least one electrode (220) (see [0029-0030]).

Regarding claim 10, Chou et al. alone teaches:

- the electrostatic holding means (220, 212) being at least attached to the contact arm (230) (see Figs. 2B and 2D).

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5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chou et al. (US 2005/0219016) taken with Charvet et al. (US 6,703,916) as applied to claim 1 above, and further in view of Nelson (US 2004/0061579).

Regarding claim 7, Chou et al. taken with Charvet et al. discloses using a (thermal) actuator, but does not explicitly teach:

- the actuating means of the microswitch comprise a piezoelectric actuator.

However, Nelson states at [0042] that the beams (14 and 20) may bend due to piezoelectric deformations. Thus, it would have been obvious to one having ordinary skill in the art to use piezoelectric means as the actuating means in the invention of Chou et al. taken with Charvet et al. to provide the bending of the arms, since deformations by various material properties (i.e. resistance, piezoelectric) are known equivalents in the art.

Response to Arguments

6. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Applicant is suggested to further claim the exact (i.e. direct) physical connection of the contact arm (completely between) the flexure arms, as well as the high deformation areas (e.g. located on *both* ends of the flexure arms).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach micro switches: Shirakawa (US 6,115,231 A), Suzuki (US 2002/0027487 A1), Weaver et al. (US 2003/0038703 A1), Weaver et al. (US 2003/0137389 A1), Dickens et al. (US 6,657,525 B1), Hallbjorner et al. (US 6,720,851 B2), Shim (US 6,806,545 B2), Yuba et al. (US 2006/0131150 A1), Robert (US 7,283,023 B2) and Kim et al. (US 7,420,444).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRADLEY H. THOMAS whose telephone number is (571)272-9089. The examiner can normally be reached on 7:00am - 3:30pm (Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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BHT

/Jayprakash N Gandhi/
Supervisory Patent Examiner, Art Unit 2835